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ABSTRACT

The basic qualities which questionnaires must have in order to serve best the purpose for which they are designed are emphasized. A description of the preliminary planning necessary to questionnaire construction, as well as the construction of the form itself, is provided. Various types of questionaire items and the advantages and disadvantages of each are discussed and illustrated, as are instructions in effective item-writing techniques. Many government people who are interested in obtaining information by the questionnaire method are not specialists in measurement procedures, but are nevertheless interested in collecting the necessary data in accordance with the most effective procedures. This pamphlet is designed to be helpful in their planning for, and design of, questionnaire forms. Administrators and reviewers may find it useful in evaluating proposed questionnaires or those already in use, and experienced specialists may find it convenient to have the basic steps in questionnaire construction outlined in a simple fashion in one pamphlet. (MV)

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CONSTRUCTION OF QUESTIONNAIRES

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U.S. CIVIL SERVICE COMMISSION
PERSONNEL
RESEARCH AND DEVELOPMENT CENTER

CONSTRUCTION OF QUESTIONNAIRES

by

Pauline A. Duckworth

U. S. Civil Service Commission
Personnel Research and Development Center
July 1973

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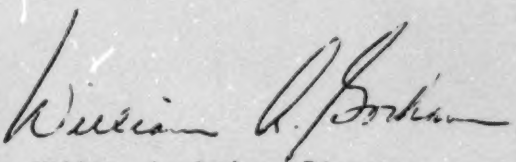
FOREWORD

This pamphlet is based on the experience of a number of Commission staff over the years in preparing questionnaires as well as on the available literature. The present edition was prepared by Pauline A. Duckworth.



William A. Gorham, Director
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INTRODUCTION

Purpose of the Pamphlet

The use of questionnaires in business, industry, government, and education has increased steadily in recent years. They are used in many different areas of government operation, including job analyses, mail investigation of candidates' qualifications, research on the effectiveness of testing instruments, and attitudinal and informational surveys.

Many people who associate the use of the questionnaire method with certain well-known fields such as public opinion polling, attitudinal research, radio-television studies, and census operations do not realize how much broader is the actual application of the questionnaire method.

There are many types of questionnaires. For example, application for any position normally requires the candidate to complete a form describing his education, training, and experience. This form is one type of questionnaire. A supervisor who is sent a form which asks him to report on or to evaluate a former employee's job efficiency receives a different kind of questionnaire, a qualifications inquiry. Again, an employee may be asked to indicate on a checklist the duties of his job which he considers the most or the least important. This checklist is also a questionnaire.

In the psychological literature many books, articles, and pamphlets deal either directly or indirectly with the development of questionnaires as one kind of testing instrument. The available material is often geared to a specific class of users--public opinion surveyors, educators, and statisticians, for example. The procedures and problems described in such material are often fairly specific to one type of survey and are meant for a reading audience with knowledge of testing.

Since the use of questionnaires in government is actually as well as potentially broad, and because all questionnaires are designed on the basis of certain common principles, a pamphlet of instructions on the construction of questionnaires in general may provide a simple, concrete guide to the development of new questionnaires and the improvement of those already in use.

Many government people who are interested in obtaining information by the questionnaire method are not specialists in measurement procedures, but are nevertheless interested in collecting the necessary data in accordance with the most effective procedures. We hope that these people will find this pamphlet helpful in their planning for, and design of, questionnaire forms. Administrators and reviewers may find it useful

in evaluating proposed questionnaires or those already in use, and experienced specialists may find it convenient to have the basic steps in questionnaire construction outlined in a simple fashion in one pamphlet.

The emphasis in the pamphlet is on the basic qualities which questionnaires must have in order to serve best the purpose for which they are designed. A description of the preliminary planning necessary to questionnaire construction, as well as the construction of the form itself, is provided. Various types of questionnaire items and the advantages and disadvantages of each are discussed and illustrated, as are instructions in effective item-writing techniques.

Some readers may, perhaps, wonder why we have placed so much stress on the many pitfalls that await the unwary constructors of questionnaires. In explanation, we offer the comment of Bruce Barton, a leading figure in the advertising business for many years and a two-term member of the House of Representatives. Mr. Barton once remarked that "Most people will frankly admit that they can't direct a dance orchestra--that they wouldn't know how to operate for appendicitis--but almost everyone seems to feel that he (or she) can work up an effective questionnaire." Because Mr. Barton's statement is, unfortunately, all too true, we have tried to increase the questionnaire constructor's awareness and understanding of the problems and hazards inherent in questionnaire design and construction.

CHAPTER 1

Characteristics of a Good Questionnaire

A questionnaire is a testing instrument in written form whose purpose is to obtain information about the subject matter with which the questionnaire is concerned. We must apply to the development of questionnaires the same principles which apply to the development of tests in general. Years of research in the proper construction and use of testing instruments have shown that there are great differences in the effectiveness of "good" and "bad" instruments. To be "good" a testing instrument, such as a questionnaire, must be properly designed and used.

A. Validity

First, it must accomplish the purpose for which it is designed. A questionnaire designed to assist in the selection of people for a job, for example, must demonstrate its validity by separating those who are likely to succeed from those who are unlikely to succeed in a given situation. The better the instrument, the finer the separations or discriminations it makes.

A questionnaire developed for a survey of attitudes toward public issues is considered valid if there is statistical proof that the respondents expressed attitudes representing their true opinions at that particular time and that the particular sample of respondents was representative of the total population. Once this proof is established, conclusions can be drawn about the attitudes of the larger population represented by the sample.

B. Reliability

Second, a good testing instrument must measure candidates' abilities in a consistent manner. A questionnaire's reliability is measured in terms of the accuracy or consistency of agreement of both respondent and rater. Respondent reliability is achieved if respondents reply in the same fashion when a questionnaire is submitted to them a second time, or if they respond in much the same way to an alternate form of questionnaire which is equivalent to the first one.

Rater reliability is achieved if two independent raters score the questionnaire in the same way, or if one rater scores it in much the same way at different times. On carefully circumscribed questions with limits put on possible responses, we would expect high rater reliability. On the other hand, items that permit free answers do not lend themselves either to high rater reliability or to high respondent reliability.

The reliability of many kinds of government questionnaires cannot be measured statistically. One example is a questionnaire sent to people on a register to determine their availability for a particular job. The first time a person fills out the form, he may indicate his availability but not be selected for the position; the next time he is asked, he may say that he is not available. In this illustration, inconsistency of the responses given at different times does not reflect unreliability of the question or of the instrument--it merely shows that the person's status or attitude has changed. The questionnaire is, therefore, furnishing valid information which is reliable in the sense that it is accurate.

C. Administration and Scoring

Third, the practicality of administration and scoring must be considered in the design of any good questionnaire. Whether the form is administered to a group, whether it is filled out by an interviewer, or whether it is sent through the mail, it must be easy to use. The ease with which a form is used depends on a number of factors, e.g., physical appearance of the form itself, the arrangement or order of the questions, clarity of directions, and the form or type (free-answer, multiple-choice, etc.) of the questions. Confusing and complicated directions or a jumbled appearance will tend to discourage respondent cooperation. However, when the form appears to be simple to complete, a respondent is more likely to respond carefully and, consequently, more accurately. It is also true that in using a form which is confusing to follow, an interviewer may have difficulty establishing or maintaining good rapport with the interviewee.

The length of a questionnaire merits some consideration. On the whole, we should not ask a respondent to spend too much of his time in completing a questionnaire. However, fairly extensive questionnaires, if they are carefully constructed and laid out, receive very satisfactory returns.

The type of paper used for questionnaires varies widely. Some are printed on expensive paper; others are mimeographed or otherwise inexpensively reproduced on cheap paper. The type of paper and method of reproduction depend upon the purpose of the questionnaire, the size of the group to which it will be administered, financial resources available for the study, etc.

Ease of scoring or rating responses is important. The form of the question used affects this characteristic of questionnaires to a large extent. Different item types will be discussed later in detail. It is sufficient here to say that the questionnaire itself will be more manageable if possible answers can be arranged in accordance with a

coding system decided upon in advance. If such a system is employed, classification and collection of data can be a relatively simple operation. Furthermore, a careful and complete definition of the use to which the data will be put and the method of analysis to be employed will greatly simplify scoring or rating responses.

D. Face Validity

Fourth, we must determine whether, in a particular survey situation, a questionnaire constructor should be concerned with face validity. In the government, examining instruments should usually not only be valid but should also seem practical and reasonable to the competitors in view of the job duties and responsibilities.

For most effective results, a respondent must be motivated to reply with care and to the best of his knowledge. An instrument which appears to him to contain questions related to the particular goal is an incentive to do his best.

There are, however, situations in which the goal is such that the questionnaire constructor may wish to avoid face validity. For example, a questionnaire of a direct type developed to find out employees' attitudes toward their supervisors may evoke unreliable answers. The employee, uncertain that his replies will be kept confidential, may feel that his position will be jeopardized if he makes critical comments. Furthermore, as many studies have shown, people do not usually rate others low on a scale. The employee may, therefore, tend to rate his supervisor as being at least average in each area (lenient tendency). He may also, regardless of whether he reports favorably or unfavorably, give a rating on each area that reflects his overall opinion of the supervisor (halo effect). If a respondent is forced to make rather difficult choices, or if he cannot guess what the intended "right" answers are, he may feel considerable resentment. Questionnaires of this type, however, are developed through specialized psychological techniques and do not fall within the scope of this pamphlet.

Because of the variety of questionnaire purposes, each of these four qualities of testing instruments cannot be applied in the same way to all questionnaires. Constructors should, however, plan for and carry through an evaluation plan for the questionnaires they develop. The matter of evaluation, as well as of data processing, and administration of questionnaires, will be fully discussed in a subsequent pamphlet addressed to these aspects of questionnaires.

CHAPTER 2

Plans and Objectives of a Questionnaire

Among authors of textbooks on test construction there is universal agreement on the need for careful planning preliminary to the actual writing of test items and design of the test form. Without minimizing the difficulty of writing items and the importance of care in their preparation and compilation, some specialists in test construction believe that the decisions made before construction are likely to be more important and crucial than those made later.

In the course of planning, the constructor's judgments may be subject to revision as he gains further information about the problem. Revisions in judgments may also be necessary because the planning stages are not necessarily mutually exclusive nor chronologically separate.

In making any survey, the first task is to define exactly its purpose or purposes. In order to develop a clear definition of purpose, the survey conductor should:

I. describe in as much detail as possible the overall problem to be investigated;

II. decide whether a questionnaire is the proper tool to use in investigating the problem;

III. define what information will be needed;

IV. decide to whom the questionnaire will be given;

V. decide upon the method of administration of the questionnaire;

VI. decide on the form the questionnaire will take and how the data will be analyzed;

VII. consider the purpose of the survey in terms of the above factors; and

VIII. plan for continuing documentation of the process and eventual followup.

Describe the overall problem to be investigated

Regardless of the type of problem to be investigated, it is always necessary to (1) define the problem or state the general objective clearly; (2) obtain agreement among the persons involved in the study concerning

a definition of the problem or objective; and (3) be sure that the people involved in the administration of the survey understand the problem thoroughly.

An example of a statement of the general objective of a study might read as follows:

> To develop an instrument or technique by which the job performance of trainees hired from a general aptitude examination may be evaluated. The instrument will be used in validity studies of this examination.

It may be possible at the beginning of a survey to state the objective very specifically, but usually it can be described only in broad terms. However, as succeeding planning stages are considered, it is necessary that the objective be clearly and definitely stated.

Decide whether a questionnaire is the proper tool to use in investigating the problem

Before deciding to use a questionnaire, a survey conductor should make certain that the information he wants can be obtained most easily and efficiently by a questionnaire.

Questionnaires are used successfully to gain information that is difficult or impractical to obtain through observation or from records, but that can be gained by interrogation. For example, employees for a particular job are selected on the basis of a testing instrument. In order to determine the effectiveness of the instrument for selection, its validity is measured by comparing scores on the test with success on the job for a sample of employees. Successful job performance could be measured by systematic observation of employees' work and a check of its accuracy over a period of time. Often, however, this would be impractical, expensive, and time-consuming. A more usual method of obtaining measures of job efficiency is to ask supervisors to rate their subordinates on a form that contains items covering the qualities and behavior that contribute to success on the job. The supervisors' ratings are the criterion with which original test scores are correlated in order to measure test validity. The validity of the test is high if employees who received high test scores are rated as more proficient on the job than are those who received low test scores.

Questionnaires are also useful tools when large numbers of respondents are required for a survey or study. If only a few people are needed to gain the desired information, a questionnaire would not be suitable because of the time and cost of designing it.

A questionnaire would also be inappropriate in the following example. An instructor wants to evaluate a reading improvement course.

He could ask the participants by questionnaire whether they felt that their reading speed and comprehension had improved. It would be simpler, however, to measure, by machines available for the purpose, the participants reading rate before and after the course. Comparison of the test results at the beginning of the course and upon its completion would show objectively the extent of improvement in reading speed and comprehension.

Define what information will be needed

Once the problem to be investigated has been described, and it has been determined that a questionnaire is the most effective tool to use, the next stage involves defining the information needed.

Many questionnaires include certain items of information that identify the respondent and the questionnaire--for example, the respondent's name, identification number, age, present position, agency, and the date and place of administration of the questionnaire. Other questionnaires ask for no identification or for partial identification. When confidential or derogatory information may be needed, and if it is not germane to the study that the source of the information be identified, the respondents should be told that they need not sign their name.

Every questionnaire constructor should be fully aware of his responsibility to the respondents to ensure that his participation does not work to his detriment. For example, in an employee attitude survey, to ask for such fine breakdowns of organizational units, biographical data, and other areas that the supervisor could readily identify the responses of a particular individual would not be fair to the respondent regardless of whether or not his opinions agreed with those of his supervisor.

In defining the areas of information to be covered, the constructor should first find out whether or not there are any previous surveys that would prove helpful. If such a survey is available, an evaluation should be made of its adequacy, perhaps by consulting the people who made the survey or checking their reports to see whether all the required data were collected. For example, in a survey of employee satisfaction, the constructor would prepare a basic list of information categories--adequacy of supervision, physical conditions, adequacy of training, etc.--and then compare his list with the broad areas outlined in previous surveys of the same kind. If comparable data are available, the constructor should use, insofar as practicable, identical questions, definitions, and quantitative units of measurement in order that the results of his survey may be compared with the related surveys more meaningfully. In addition, careful records of each step in the study should be documented for future reference and subsequent followups.

A questionnaire constructor should not hesitate to consult other persons at any stage in the planning. If he does not have sufficient knowledge to define the broad areas of the problem himself, he should survey relevant literature and consult people in a position to have the knowledge. In the previously mentioned survey of employee attitudes, he would conduct personal interviews with employees on the job and with their supervisors. He would also read reports of, and investigate, similar surveys made in industry and government.

In any survey which attempts to measure opinions, preferences, or attitudes, the development of a questionnaire raises many technical problems and a constructor probably should consult a skilled research psychologist during the entire planning process. In many surveys made in the government, a team has the responsibility for the development and administration of the questionnaire; at least one member of the team should be an expert in the particular field in which the survey is being made.

When the broad categories of needed information have been determined, they should be arranged in whatever order seems most logical and appropriate. A questionnaire may have to be shortened and some categories eliminated. The constructor should make certain, however, that he does not confuse conciseness with brevity by eliminating important categories whose exclusion will seriously impair the questionnaire's effectiveness.

Decide to whom the questionnaire will be given

Deciding to what group the questionnaire will be given necessitates some knowledge of the characteristics and size of the group as well as of sampling procedures.

The purpose of the survey generally determines the composition of the group to be surveyed. This determination can be made after investigation of the total possible number and kind of people who could participate in the survey. In many cases it is not practical to use the total possible group. To illustrate, a survey of morale in a small field office could include the entire staff of the office, whereas the same type of survey conducted in a large central office probably would require selecting a sample of employees.

Basically, a sample is selected so that it is representative of the total "population." The total population consists of all the people who possess the characteristics pertinent to a particular study. The sample must be representative in order that the conclusions drawn and the predictions made on the basis of the sample results will apply not only to the sample group but also to the larger population which it represents.

A representative sample duplicates the characteristics of the total population that are likely to influence the results of the survey. The characteristics necessary for representativeness vary from one survey to another, depending on what is being surveyed. Whether members of a sample group live in the country or in the city might be important in a survey of public opinion and the sample would have to contain members from the city and the country in the same proportion that they are found in the total population under consideration in the survey. Whether employees live in the city or the country, however, would probably not be an essential characteristic in a survey of attitudes toward cigarette advertising.

Determination of the characteristics of the questionnaire population will help provide information necessary for actual item construction. As will be seen later, the form and wording of questionnaire items are extremely important, the length of the questionnaire may affect its usefulness, and proper motivation of respondents is necessary for a good survey. Knowing what kind of people are to respond to a questionnaire is essential to the development of it.

The techniques of proper sampling are complicated, and it is essential for anyone who is not skilled in sampling techniques and procedures to obtain technical assistance.

Once the sampling technique has been decided, a list of the steps to be followed should be prepared for the guidance of those who will participate.

Decide upon the method of administration of the questionnaire

One method of administration involves direct contact with the respondent in a personal interview. Personal interviewing with a questionnaire form is a widely used technique in public opinion polling, radio and TV surveys, and qualifications investigations. The interviewer may use a standardized questionnaire form, asking the respondent each question on the form and recording his answers. He may, instead, conduct a "focused" interview. Such an interview consists of a series of open-end or free-answer questions centering about the questionnaire topic. These questions are thought out in advance by the interviewer and he records the respondent's answers as nearly verbatim as possible. The form of the focused interview is fairly unstructured--that is, the interviewer is given considerable leeway in his dealings with the respondent. An example of an open-end question is, "What do you think about the city's zoning laws?" Depending upon the respondent's reply, the interviewer may go on to other questions related to the questionnaire topic or he may ask further questions about the zoning laws in order to obtain more complete information about the respondent's opinions.

A second possible method of obtaining completed questionnaires is to mail the form to respondents.

Finally, questionnaires may be administered directly to a group, either assembled in one place or in their usual places of work.

A decision as to the best method of administration of a questionnaire can be made only after a review of the advantages and disadvantages of each method. The following evaluations of the methods are based on the methods themselves, assuming optimum wording of the items and optimum administrative conditions.

Advantages of the personal interview:

1. It yields a high proportion of usable, completed questionnaires that cover the required sample population.

2. It permits the interviewer to clear up any misunderstanding or misinterpretations of the interviewee by repeating or rephrasing questions.

3. It enables the interviewer to secure spontaneous rather than studied responses to the questions he asks.

4. It may provide confidential or derogatory information which a respondent would not otherwise furnish. Questions on subjects about which the respondent is likely to be sensitive may be sandwiched between questions to which he will probably not have an emotional reaction. Some people, too, hesitate to give in writing certain kinds of information which they will give orally.

Disadvantages of the personal interview:

1. The less structure there is in the form used by the interviewer, the more difficult it is to analyze the responses statistically. The variety of responses given to free-answer questions does not always lend itself to coding methods which facilitate analysis.

2. The reliability of a questionnaire completed during a personal interview is likely to be lower than the reliability of a form filled out by the respondent himself. The interviewer, in explaining terms or in adapting his language to the particular interviewee, may consciously or unconsciously affect the latter's responses; a reinterview by another person might yield different replies.

3. Personal interviews are very expensive. They are time-consuming, and transportation costs are high. They require a staff of trained interviewers as well as an organization capable of properly selecting, training, and supervising the interviewers.

4. Personal interviews take more of the respondent's time than other methods. If the respondent does not have sufficient time for the interview and a return visit on the part of the interviewers is necessary, the general cost of the interview is increased.

Advantages of mail questionnaires:

1. They permit a broader geographical area and a larger number of respondents to be covered at less expense than is possible with personal interviews. This lower cost will not necessarily apply if personal followups are made.

2. The expense and time necessary to insure a staff of trained interviewers are eliminated. Much of the work involved in mailing inquiries can be done by a clerical staff.

3. The questions are standard for all respondents.

4. The respondent can complete the form at his convenience and take as much time as he wants to fill it out.

Disadvantages of mail questionnaires:

1. Many mail inquiries are not returned. This raises the problem of bias in the results of the survey because the respondents who return the forms may not be representative of the total sample group.

2. Many mail inquiries are not usable, either because they are incomplete or because the responses are not legible or understandable.

3. The length and appearance of a mail questionnaire can influence its effectiveness. A form which looks too complicated or too long tends to discourage completion and return.

4. Respondents may not provide confidential or derogatory information.

5. Many questions which might antagonize respondents must be omitted from mail questionnaires.

6. A questionnaire may be answered by someone other than the person to whom it is addressed; for example, by a secretary.

Despite the disadvantages of mail questionnaires cited, we should point out that the response rate to many of them is good. It undoubtedly depends upon a combination of factors--the group surveyed, the relevance and quality of the questionnaire, the persuasiveness of the covering letter, etc.

Advantages of questionnaires administered either to a group assembled in one place, or to persons at their individual workplaces:

1. When respondents are assembled in one place, the physical conditions are controlled and standardized for all.

2. One or two persons can supervise the administration of the questionnaire to large groups, and only a small staff of trained people is needed.

3. Respondents may cooperate more fully if they are part of a group and know that administration of the questionnaire is an approved procedure for which time has been allotted.

4. All questionnaires are returned and are likely to be completely filled out because respondents can ask questions of administrators.

5. Questionnaires which are filled out by the respondents at their normal places of work can be completed at their convenience. With certain types of respondents, e.g., those who cannot always conveniently leave their work or those who work on predetermined time schedules, this method is very advantageous.

Disadvantages of above questionnaires:

1. Some questions may require the respondent to refer to records for his answers. Such questions would not be feasible for group administration, but would be satisfactory for administration in normal workplaces.

2. In group administration, it sometimes happens that not all of the members of the group can be assembled at one time. When such a situation exists, it may be practicable to schedule more than one group meeting, or give the questionnaire to respondents at their normal workplaces.

After consideration of the advantages and disadvantages of the above-mentioned methods of administration, a survey conductor should select the particular method or combination of methods which will best serve his purpose. He may decide that personal interviews will provide information on the basis of which he can outline the general areas of information needed, but that the final questionnaire will be administered to a group. On the other hand, if respondents must refer to certain records, he may decide to have the forms filled out by the respondents at their individual workplaces.

In the investigation of candidates' qualifications, which is part of the overall examining program of the government, the examiner must decide whether to check candidates' qualifications by personal interviews or by mail vouchers (employment reference forms). He makes his decision

on the basis of such factors as the grade of the job, the importance of variation in personality to successful performance on the job, and the number of applicants to be investigated.

Decide on the form the questionnaire will take and how the data will be analyzed

Regardless of what kind of survey is carried out, the survey conductor should decide in advance the method of analysis to be employed.

A survey conductor must extract the data from each questionnaire and collate them for all questionnaires. Then he can analyze the material systematically.

He must consider what data he wants to get in quantified form, and whether the data will be hand- or machine-tabulated. His decisions about how and on what basis the accumulated information will be analyzed influence the content and item types to be included on the form as well as the methods to be used in scoring or rating replies.

The following illustration shows why planning for analysis is necessary in order that the survey results may be meaningful and useful. An agency is interested in finding out how well informed its employees are about their retirement benefits so that the agency may determine whether or not a retirement-information program is necessary. The survey conductor designs a questionnaire form which asks specific, factual questions about retirement, and submits it either to all employees or to a sample of employees in the agency. The survey conductor in this situation had decided in advance on what basis the data would be analyzed and this insured the inclusion of items covering all the necessary factors.

Analysis of item responses showed how much correct information employees really had and pointed up inaccuracies in their information. The data were broken down so that the survey conductor knew whether knowledge was related to such factors as grade level of employees, types of positions held, length of service with the government, family status of employees, exposure to information on retirement benefits and regulations, and respondents' opinions about their own knowledge of retirement benefits.

Once the analyses were made, the agency knew whether an information program was necessary, whether it was needed for all employees or for special groups of employees, and what specific areas of retirement information should be emphasized.

Consider the purpose of the survey in terms of the above factors

The general purpose of the study stated at the beginning of the project should now be reexamined in the light of the information so far determined: what information will be gained by the study, who will provide the information, by what method it will be obtained, and how it will be analyzed after it is tabulated.

This complete statement of purpose is a summation of the planning prior to questionnaire construction. Certain changes in the original general purpose may have to be made at this point if preliminary investigation has raised new problems. The statement or outline of purpose can serve as a guide to planning and to administration of the survey so that the results will be complete and meaningful.

A statement of a general purpose or problem is illustrated as follows:

General Purpose of the Project

To develop an instrument or technique by which the job performance of trainees hired from a general aptitude examination may be evaluated. Some of the trainees will be employed in the main office of the firm; the others will work in branch offices throughout the country. The instrument will be used in validity studies of this examination.

Information Concerning Subsequent Planning Stages

Is a questionnaire the proper tool to use?

Since the general aptitude examination will be used to fill an estimated 120 different jobs in approximately 50 offices throughout the country, validity studies will require a criterion rating form applicable to a large number of different positions.

A graphic rating scale on which a supervisor compares an employee with others in the group seems inappropriate for this purpose, since there will be differences in employee groups in different jobs in different offices. It seems advisable to have supervisors rate employees on specific behavior so that ratings will be comparable from job to job.

What information is needed?

Supervisors' ratings of employees on items describing behavior in several broad aspects of job performance. These are items which were developed on the basis of earlier interviews with supervisors who felt that the items distinguished between good and poor employees.

To whom will the questionnaire be given?

To supervisors of employees in positions filled from the general aptitude examination.

How will it be administered?

By mail, since it will not be possible to contact supervisors personally.

How will it be analyzed?

Supervisors' ratings of job performance will be compared with employees' general aptitude test scores.

Plan for continuing documentation of the process and eventual followup

Accounts of what is done should be maintained with documentation in order that there is written evidence of all procedures, plans, and actions. A questionnaire conductor should ensure that careful records are maintained of each step in the process. In the first place, it will enable him to know, at any given stage, what has been done up to date and the rationale for it. Secondly, it will be of value to other persons who plan questionnaires along similar lines. Documentation points up the approaches that prove successful as well as those that are abandoned.

A third consideration is this: if the survey conductor, for one reason or another, has any plans to followup on the group surveyed at a later date, he must have access to all facets of the current study in order to plan realistically and intelligently for the followup.

CHAPTER 3

Defining Questionnaire Content

The first step in the construction process is to describe in detail the specific questionnaire content. The list or outline of specific content is a detailed breakdown of the general areas of information decided upon for the study.

The constructor breaks down each general area of information into the necessary specific areas. The number of specific areas of information within a general area is dependent on the breadth of objectives of a particular survey.

At this stage the constructor should work closely with specialists in the particular field with which he is concerned. They will help to subdivide the general areas into small, distinctly separate units.

It is imperative for the constructor to keep a careful written list of the content details. Later, when the items are written, he can indicate on the detailed content list the individual items on the form that provide information for each part of the list. This procedure will insure coverage of each area of required information with one or more questionnaire items.

The following illustrations show how two different kinds of general information areas are subdivided into specific areas. First we will show how the general area of "identification" information can be broken down.

Identification Information

Identification of Respondent

1. Identification Number
2. Name
3. Address
4. Sex
5. Age (birthdate)
6. Agency or installation
7. Branch, Section, Unit, Company
8. Position (grade, salary, length of service)
9. Other: List _____

Identification of Questionnaire

1. Title (usually supplied)
2. Sponsoring organization (ditto)
3. Place of administration
4. Date completed
5. Interviewer (name or number)

Following is an outline of the breakdown of one of the factors (Nature and Extent of Supervisory Control) that is used in determining standards for a series of positions.

I. Nature and Extent of Supervisory Control (for all employees)

A. Nature of Assignments

1. Extent of detailed information given in assignments with regard to

a. objectives
b. procedures
c. methods
d. kind and variety of assignment

2. Grade level determining factors of position

3. Frequency of assignment

a. regular
b. cyclical
c. seasonal
d. one-time assignment

B. Supervisory Control over Procedures and Methods

1. Extent of responsibility for planning procedures and methods

a. Who plans?
b. Who reviews plans?
c. Who approves plans?
d. Relation to kind and variety of assignment

2. Extent of responsibility for carrying out assignments

a. Who carries them out?
b. Who reviews the work?
c. Who approves the work?
d. Relation to kind and variety of assignment

3. Frequency of supervisory control over procedures and methods

a. regular
b. periodic
c. upon completion of work
d. related to kind and variety of assignment

II. Nature and Extent of Supervisory Control (for supervisors only)

A. All of the above information needed about supervisors' control over the work of others

B. Extent of Supervisory Control as Related to

1. number of subordinates
2. grade levels of subordinates
3. specific characteristics of assignment (technical, inter-agency, intra-agency, research, etc.)
4. kind and variety of assignment

CHAPTER 4

Selecting Appropriate Item Types

Decide what type of items to use in the questionnaire

Items can be either subjective or objective, depending on the method of scoring or rating. Subjective items, i.e., open-end or free-answer items, are those in which the subject responds to the item in his own words. The nature of the responses to these items requires a subjective evaluation of the response by a rater. Often, however, he has rating standards to use as a guide in making his judgments.

Objective items do not involve subjective judgment in their scoring, although the respondent may use subjective judgment in answering the question. Objective items are rated on the basis of a scoring system which does not permit raters to differ in their evaluation of item responses.

We cannot say that any one type of item is the "best" type. We can describe the characteristics, advantages, and disadvantages of each. The type or types that will be most useful for a particular questionnaire is determined after comparing the scoring methods, methods of administration, and appropriateness of different types for the subject matter of the questionnaire.

Characteristics and examples of various item types

A. Free-answer, open-end items

The basic characteristic of an open-end item is that it provides the respondent freedom of response. The amount of freedom varies from one question to another, depending on the limits inherent in the item.

Example 1: Have you any additional comments to make about the on-the-job training you received?

Example 2: Is there anything else you would like to say about your job?

The first example gives the respondent freedom to make any comments he likes about the training he received, provided he limits his discussion to on-the-job training. The second example is a wide-open question in which the respondent has complete freedom to discuss anything related to his job.

In the exploratory phases of a survey it is often of value to devise open-end questions in order to get leads for the development of the general and specific areas of information needed. To illustrate, in planning a "job satisfaction" survey, it is necessary to know the basic conditions or factors that influence employee satisfaction on the job. By asking a sample of employees in a particular office or in particular positions to answer some general questions designed to bring out their reasons for job satisfaction or dissatisfaction, the constructor can formulate the general factors in the work situation that make for such satisfaction or dissatisfaction. Later, on the basis of the general factors, specific objective questionnaire items can be prepared.

Open-end questions can serve as "safety-valve" or "catch-all" questions. They frequently are included to give participants the opportunity to furnish additional information about questionnaire subject matter or to discuss an area not covered in the structured part of the questionnaire form. When included in questionnaires which deal with attitudes and opinions rather than observations and facts, they may supply information not otherwise obtainable and also give respondents the feeling that they have had a chance to write or say everything they wish.

Open-end questions may be used successfully as followup items, asking for further details, examples, suggestions, or reasons.

Example 3: If your answer to A, B, or C is "yes", give details in item_____.

Example 4: Why?_____

Example 5: Anything else?_____

Example 6: Give an example of..... _____

Free-answer questions that ask how many, how long, to what extent, etc. should be so phrased that respondents know the units, time intervals, or degrees in which their answers should be expressed. The question, "How often do you change jobs?" would be improved if it were reworded to ask, "How often in the last 10 years have you changed jobs?" Similarly, "How much of your time do you spend typing?" should be revised to ask, "In an average day, what percentage of your time is spent typing?"

The time required to answer open-end questions is much greater than the time required to answer objective-type items. This may discourage some respondents, particularly recipients of mail questionnaires, from completing the forms as carefully or completely as they might. They may be unwilling to write long answers, or too busy to take the time to do

so. Furthermore, they may not feel that they understand the question or the issue thoroughly enough to comment on it without additional guidelines.

When free-response items are used in personal interviewing, they may increase the time required for the interview if the respondent gives long answers which the interviewer must record.

Because the content and language of each respondent's answer to the same open-end question differ, it is difficult to compare the answers of different respondents. The answers, too, in addition to taking a substantial amount of time to score because of the amount of material to be read, require subjective judgments on the part of the rater. He must try to avoid bias in rating free-answer items; sometimes a rater's personal characteristics, attitudes, and opinions may influence his evaluation of a response even though standards or guides for rating the item are provided.

It has been found that there is much higher agreement on the rating of free-answer questions among trained than among untrained raters. This finding is not surprising since a training course would undoubtedly include discussion of the questions themselves and the standards of rating for each individual item. However, even assuming trained and impartial raters, rating is complicated by differences in the meaning of words to the various respondents as well as to the respondents as compared with the rater.

With some free-response questions, it is possible for the constructor to decide in advance that the replies will be arranged in logical groupings. In an analysis of data by age, for example, the constructor can prepare age boxes (21-25, 26-30, 31-35) etc. and ask the respondent to put a checkmark in the appropriate box.

To summarize, free-answer, open-end questions have definite usefulness under certain conditions. However, in view of the potential difficulties involved in their use, it is well, in general, to consider using other item types when they can appropriately provide the necessary information.

B. Short-answer items

Short-answer items are a limited kind of free-answer item. They are statements or questions which require the respondent to supply a brief answer in a space provided for that purpose.

The respondent is given more leeway in his answers than in forms where alternative responses are listed. The item topic and wording

determine whether individual short-answer items assume the characteristics of free-answer items or of objective items. The more freedom the subject is given, the greater is the resemblance to open-end items and the more difficult the objective scoring.

Example 7: (limited) The lowest salary I will accept is $_____ a year.

Example 8: (fairly unlimited) List the comparable jobs to which these employees could be transferred.

Short-answer items are used in questionnaires when the topic of the item is such that the number of possible responses does not permit the item to be written in multiple-choice form but the constructor, nevertheless, wants to put as much limitation on the item as possible.

Completion of short-answer items sometimes depends on the individual's recall of information or on his supplying information obtained from records or other sources.

Example 9:

Fill in the columns below for each of your arrests for violating a driving law (not parking) DURING THE PAST TEN YEARS. Be accurate and complete. A check of police traffic records and court records is made routinely for every applicant.

Arrested for what? (speeding, driving while drunk, passing a red light, etc.)	What year?	Where? (city or town and State)	Were you convicted?	Was permit revoked or suspended?	How much was the court fine or the sentence? How much was the fine or the collateral without going to court?

Example 10: The number of reports of rating mailed by your section last month was_____.

In this case, the respondent may not remember the number of reports mailed by his section during the past month, but he can find out and report the proper number on the form.

Examples 9 and 10 would not be satisfactory for inclusion on a questionnaire form to be administered in a group situation where records or other sources of information are not available. Example 9 is taken from a form which an applicant completes at home and submits when he applies for a position. Example 10 could be used successfully either in a personal interview or on a form filled out by the respondent at his desk.

C. Dichotomous or two-response items

The dichotomous item form provides the respondent with only two alternatives from which to select his answer. The alternatives consist of separate, mutually exclusive categories such as "Yes-No", "Agree-Disagree", and "Right-Wrong."

Example 11: Are you now employed by the Federal Government?

Yes 1

No 2

Two-way questions are at the opposite extreme from free-answer questions. Open-end items give the respondent freedom of response, but dichotomous items force him to decide between two choices. Forcing a decision is satisfactory provided that the issue involved is a clear-cut dichotomy and the choices are realistic.

Many issues have only two sides, e.g., "is or is not" or "know or know not." Such issues are particularly appropriate for dichotomous item construction.

Example 12: Are you currently engaged in more than one paid employment?

Yes ☐ No ☐

Example 13: Check one: Male ☐ Female ☐

Dichotomous questions are commonly used in combination with other item types when the basic issue is unquestionably two-choice, but further

details are required. For example, it may be desirable to find out if a person has received any planned training in connection with his work. This can be asked in a two-choice question and further details regarding the type, quality, and amount of training can be obtained from multiple-choice questions.

Two-way questions must be carefully worded so that the respondent has a clear understanding of what information is wanted.

Example 14: I eat in the cafeteria in my building every day.

Yes ☐ No ☐

If a respondent checks "Yes", it could mean that he brings his lunch from home every day and eats it while sitting in the cafeteria, or that he buys as well as eats his lunch there. It could mean that he brings part of his lunch and buys the rest in the cafeteria. A "No" answer could indicate that he does none of the possibilities mentioned, but eats outside the building most or all of the time.

The wording and meaning in this example are ambiguous all the way through. The word "eat" is not defined clearly (is it buying or actually consuming the food?) and the expression "every day" is so limited that many people who "eat" in the cafeteria almost every day would hesitate to answer affirmatively. It would be difficult for the respondent to know how to answer because he would not know precisely what information was needed. The rater would not know what the responses really meant since so many interpretations of the item are possible.

In two-way questions, both alternatives are not necessarily stated. If we ask the question, "Are you going to the library today", the implied negative "or not?" seems so obvious, and the possibility of misinterpretation so slight, that it need not be included. Studies have shown, however, that no matter how clear such questions appear, it is possible that the assumption may be challenged. In case of any doubt, it is always safer to state the question completely.

Many public opinion surveyors find that dichotomous questions are advantageous because they are easy to answer and to score, and can be designed to fit many situations. They feel, too, that such questions come closest to duplicating the types of decisions which most people are accustomed to making. This does not mean that the final choice of response to a two-sided opinion or attitude question is simple. Before selecting his answer a respondent may have made several decisions of which he is unaware.

One of the limitations of even carefully written dichotomous

opinion or attitude questions is that the final response indicates only a general or overall opinion or attitude. It does not give any indication of reasons for the opinion, of the intensity of it, or of any qualifications the respondent may have about it.

As an example, one might consider the question relating to liking or not liking a job. A respondent may generally like his job, but still dislike certain aspects of it. He may like his duties but not his supervisor. He may like his job and working conditions so well that he would not make a change unless an extraordinary opportunity arose. On the other hand, he may be happy at work but willing to change if a special offer were made him.

If the respondent were asked, "Do you or do you not like your job?" his answer would not yield this detailed information. However, the survey conductor might find it useful to include a dichotomous generalized question such as this one, and also include questions to investigate the components of liking or not liking a job. The latter questions could be put in multiple-choice form in order to obtain the respondent's opinion about specific factors such as supervision, training, job duties, work conditions, and salary. The responses to these items, together with the response to the original "like" or "not like" item would provide valuable data for analysis of the elements that make for job satisfaction.

Issues concerned with attitude and opinion are not always clear-cut, yet respondents are frequently asked to express them in dichotomous-type questions. Such issues frequently produce a third response, even though only two choices are given.

Example 15: Have layoffs been handled fairly? Yes ☐ No ☐

The extra response may be "sometimes", "don't know", "both", "neither", or "no opinion." If such a question is presented orally, the interviewer records the unsolicited third response. On a written form, however, some provision must be made for the extra response; otherwise, the question may be omitted. There would be no way of knowing the reason for the omission and the question would not yield any information.

The writing of dichotomous questions to investigate attitude and opinion (like the writing of any attitude and opinion items) is a technical job. The public opinion literature is filled with examples of how changes of a word or two in a dichotomous item significantly change the response to that item. Unless a questionnaire constructor is a specialist in the investigation of attitude and opinion, it would be advisable to get technical assistance.

D. Multiple-choice items

Multiple-choice items are composed of an introductory part, called the item premise, and a list of three or more alternative responses from which a respondent selects at least one answer. His freedom of choice is greater than in a two-choice question, but is more limited than in a free-response item.

Multiple-choice items have the following advantages:

1. They are easy for the respondent to complete.

   The respondent does not have to express in his own words the information desired, as he does in an open-end question. Although he has more material to read, he does not have to write or give orally an answer which may be lengthy.

   Recording the response is easy because the respondent merely has to make some sort of mark, i.e., place a checkmark next to a response or in an answer box, circle the proper answer, or blacken a space on an answer sheet.

2. They are easy to score or rate.

   Scoring or rating is also a simple process; items can be scored by hand or by scoring machines. The responses can be lettered or numbered and arranged so that the coding and extraction of data are routine clerical operations. Multiple-choice responses, like those of other objective item types, can be precoded. In checking the response, the subject is actually coding or classifying his answer.

3. They can elicit varieties as well as degrees of information, opinion, and fact.

   A two-way question provides only responses which represent a choice between two extremes. In some cases, e.g., the male-female dichotomy, the number of responses is obviously limited. On the other hand, open-end questions can produce such wide varieties or so many gradations of opinion or factual information that categorization or classification is difficult or unwieldy. For example, place of birth (city) permits a practically limitless number of categories. Multiple-choice items are not suitable in either of the above illustrations; they are appropriate when the minimum number of responses is three, and the maximum number is finite.

a. Variety of response

Example 16. (two-choice) Marital status:

Married ☐ Single ☐

(multiple-choice) Marital status:
a. Married
b. Divorced
c. Separated
d. Widowed
e. Single

b. Measurement of degree

Example 17: (two-choice) What is your opinion of the employee's overall competence?
Satisfactory ☐

Unsatisfactory ☐

(multiple-choice) Check the box that represents your opinion of the employee's overall competence.

Outstanding ☐

Good ☐

Fair ☐

Poor ☐

4. Multiple-choice items may be written in various forms that allow the writer flexibility in item construction.

The item constructor selects the particular multiple-choice form which is most suitable for each item topic. A single questionnaire may contain several different kinds of multiple-choice items.

a. Forms requiring only <u>one</u> answer

1. Incomplete premise and three or more alternatives

Example 18: In high school, I took a

a) college preparatory course
b) liberal arts course
c) commercial arts course
d) mechanical arts course
e) course other than those listed above

2. Complete premise (direct question or statement and three or more alternatives)

Example 19: Which one of the following best represents your educational level as of the end of this school year?

- Some high school ☐
- Completed high school ☐
- Some college or specialized school above high school level (such as business college or nursing) ☐
- Bachelor's degree or equivalent ☐
- Some graduate work ☐
- Law degree ☐
- Master's degree or equivalent ☐
- Some work above the master's level ☐
- Doctor's degree or equivalent ☐

b. Forms requiring more than one answer

1. Incomplete premise and three or more alternatives

Example 20: Please check the appropriate space or spaces.

I have known the candidate as

- ☐ an undergraduate student
- ☐ a graduate student
- ☐ a research assistant
- ☐ a teaching assistant
- ☐ other (specify)_____

2. Complete premise and three or more alternatives

Example 21: Check all of the following position evaluation methods which you use to determine levels of work.

- ☐ Federal Position Classification Plan
- ☐ Job Ranking
- ☐ Factor Comparison
- ☐ Point Method (rating scale for factor degree values)
- ☐ Other (describe)_____

c. Forms to determine degree, amount, or intensity

In questionnaires designed to measure the opinions, interests, knowledge, or abilities of the respondents, it is often important to determine the degree, amount, or intensity. The alternatives in each question are degrees or steps in a continuum. The range of the continuum is from one extreme to another (most to least, like to dislike, excellent to poor). The steps are graduated, the number of steps depending on the degree of discrimination desired. The item constructor makes the limits of the continuum as wide or as narrow as is necessary or appropriate for the topic.

Example 22: How do you feel about the proposed city sales tax?

- ☐ Strongly approve
- ☐ Approve
- ☐ Undecided
- ☐ Disapprove
- ☐ Strongly disapprove

As in the example above, it is often necessary to provide a response such as "undecided", "have no definite opinion", "not sure", etc. In many questions, however, providing such a choice permits respondents to avoid giving a definite answer when such an answer is possible.

Example 23: What do you think of your immediate supervisor?

a. Like him very much.
b. Like him fairly well.
c. Dislike him somewhat.
d. Dislike him very much.
e. Don't know.

Since everyone knows whether or not he likes his supervisor, a noncommittal answer such as "don't know" should not be included among the alternatives.

Ranking items are used to determine relative standings. The respondent is asked to arrange a list of statements, words, phrases, or people in the order of his preference. He ranks such a list on the basis of a given standard. For example, employees may be asked to rank each of several work duties on the basis of the relative amount of time spent in their performance. The standard in this case is the relative amount of time an employee spends performing each of these duties.

Although most ranking items involve subjective judgment on the part of the respondent, there are objective methods to analyze the data obtained.

A constructor must be aware of a serious limitation of ranking items. He cannot assume that the intervals between the ranks are equal. On an item in which the respondents rank job duties according to the

amount of time spent on them, a job duty given the rank of "1", the most time-consuming duty, may not necessarily take very much more time than the duty to which a rank of "2" is assigned. The duty ranked in third place, however, may take much more time than the duty to which the respondent assigns fourth position. By statistically combining the rankings of all respondents to a particular item, a survey conductor can get average (mean) ranks for each factor and measures of spread in the ranking of each factor among respondents. He can not conclude, however, that the duty which received an average rank of "3" took twice as much time to perform as a duty with an average rank of "6". He can conclude that certain duties took more or less time than others.

Example 24: Listed below are various job duties. Please rank these duties according to the percentage of time you spend on them in an average week. Write a (1) in the right-hand column opposite the duty on which you spend the greatest percentage of your time, a (2) opposite the duty on which you spend the next largest percentage of your time, etc. If you spend a substantial amount of time on a duty which is not listed, indicate both the duty and its rank order under "other (specify)".

Job Duty	Rank Order of Job Duty by Amount of Time Spent
Assigning jobs	_____
Obtaining equipment and materials	_____
Reviewing employees' work	_____
Training employees	_____
Keeping records	_____
Scheduling work	_____
Devising improvements	_____
Attending meetings	_____
Other (specify)_____	_____

Descriptive items involve the rating of people or variables without comparison (as in ranking items) to other persons or variables in the same group. These items can be used to gain information about one or more persons or variables with respect to certain opinions, attitudes, interests, etc. The item categories or steps on the continuum represent a systematization of judgments, assessments, or ratings from which the respondent selects his answer.

The degrees or steps in the continuum may be defined in brief, abstract terms, or in more detailed descriptive terms. In either case, the

constructor should be certain that the alternatives are separate and clear, and that they cover the range of the particular interest or attitude completely.

The variety of descriptive item forms is limitless. When constructing an item, the constructor can adapt an existing form or he can devise a form suitable for the material with which he is working. The forms differ in format and wording, but all require merely a checkmark, number, or symbol to complete the items.

Example 25: Does your supervisor give you clear, detailed, and complete directions about your duties?

___ always
___ most of the time
___ sometimes
___ never

Example 26: Does your supervisor give you adequate instructions about your duties?

___ His instructions are always clear and complete.
___ His instructions are usually clear and complete, but I occasionally have to ask him about one or two details.
___ His instructions are often unclear and incomplete, and I frequently have to check details with him.
___ His instructions are rarely clear and complete.

Example 27: For each task, circle
(L) if you like to do it
(I) if you are indifferent and don't care whether you do it or not
(D) if you dislike doing it.

1. Replace fluorescent bulbs. L I D
2. Install an air-conditioner L I D

5. In multiple-choice items, the constructor does not have to depend on the respondent's recall of all possible alternatives before selecting a final response, as is necessary in free-answer items, because practically all of the possible answers are provided. Even though the number of possible alternatives in an item may be great, it is still preferable to write the item in an objective multiple-choice form than it is to sift through much written material. Preliminary research usually

brings out almost all of the expected responses, and the small proportion that are not provided for can be written in an "Other (specify)" category.

Example 28: (free answer) List all technical manuals which you refer to in the course of your regular duties.

_____

Example 29: (multiple-choice)

Check all technical manuals which you refer to in the course of your regular duties:

___ TM 201
___ TM 203
___ TM 204
___ TM 208
___ TM 219
___ Other (Specify)_____

When completing the free-answer question, an employee might forget to list one or two of the manuals, particularly if he does not use them frequently. In the multiple-choice question, the constructor has included all the manuals which, by investigation, he is reasonably sure that employees in the particular job normally use in their work. A respondent is unlikely to omit any since the list serves as a reminder to him.

CHAPTER 5

Classifying Questionnaire Data

Decide how to code and extract data

Earlier in this pamphlet we listed practicality of scoring as one of the essential characteristics of a good questionnaire. Planning for scoring and extraction of data is part of the process of constructing a questionnaire, although it is not a separate or exclusive step in the process. It is a continuing consideration during the stages of deciding on the types of items to be included, their arrangement, and the layout of the questionnaire.

How the data will be analyzed should be decided early in the questionnaire construction since this will affect the types of items used, their scoring, and possibly their arrangement in the questionnaire.

In order to extract data from completed questionnaires in an orderly and accurate way, a coding (scoring or rating) system is devised to cover each item on the questionnaire form. A system for coding the responses consists of assigning numbers or symbols (letters, abbreviations, etc.) to each possible answer. The codes classify the responses so that the information received from respondents can be easily extracted and tabulated preparatory to analysis. The respondent may select his answers in accordance with the prescribed code specified in the directions given him, or the interviewer may code the respondent's answers. In cases where a predetermined code has not been developed, the coding is done by trained coders after the questionnaires have been completed.

The type of coding system used in questionnaires is, in general, dependent on whether the data are to be tabulated by machine or by hand. Machine tabulation requires numerical or alphabetical codes. For hand tabulation, any coding symbols may be used.

Exceptions to usual coding procedures are the methods used for rating application forms and qualifications questionnaires (vouchers) as part of the Federal examining process. These rating methods are described in appropriate government publications.

Coding of different types of items presents different problems which should be kept in mind while individual items are being designed.

The development of a coding system for items is a complicated process requiring the preparation of groupings and subgroupings of possible responses to which group and subgroup codes can be assigned. These groupings are made on the basis of the results of pretesting the items.

Open-end items, which are scored subjectively by a rater, are difficult to code. The rater reads each response and assigns what he thinks is the appropriate code to it.

Since the rater must, in many cases, use personal judgment in the assignment of codes, the reliability of the coded ratings from one rater to another, or even for the same rater on a later rerating, may not be statistically high enough to be acceptable.

There are, of course, times when a questionnaire author feels that, for his purpose, free-answer items would be the most suitable form to use, in spite of the difficulty of rating them. However, he should be sure that the information needed cannot be obtained from a different item type that could be handled more easily.

Many objective-type questionnaires contain one or two free-answer items. The rest of the questionnaires can be coded routinely, and the open-end responses can be rated carefully in accordance with a pre-arranged coding system.

The coding of objective-type items is a simple and routine matter. Two-choice and multiple-choice questions can be set up so that the coding is actually done by the respondent at the same time that he checks his response.

Example 30: Are you a citizen of the United States of America?

Yes 1
No 2
x

(Circle the number to the right of the answer you select.)

The numbers "1" and "2" are code numbers and the "x" is also a code which the questionnaire reviewers use to indicate that no data are obtained; that is, when the question is omitted or both alternatives are circled.

In an item such as Example 30, the proper number (which is the same as the code symbol) is marked either on the questionnaire form or on an answer sheet by the respondent. The extraction of coded data can be done directly from the answer sheet or questionnaire form.

There are two main advantages in using a code system which involves the numbering or lettering of item responses (precoding). First, later coding of reponses is avoided, resulting in economy of time and money. Second, the possibility of error in marking the codes by a second person is eliminated.

Examples like the one above normally appear on questionnaires completed by the respondents themselves. Similarly, in recording subjects' responses on an interview form, an interviewer marks codes.

Example 31: Respondent's age: ☐ 20-29
☐ 30-39
☐ 40-49
☐ 50 or above

In the above illustration, it would not be necessary for the interviewer to write down the respondent's exact age; he would merely check the appropriate box. Thus the question is answered and coded in the same operation.

One possible difficulty may occur in precoded items if a large percentage of responses to an item are found in a "catchall" or "Other (specify)" category.

Example 32: Responsibility for this work is assigned to which of the following organizational levels?

☐ bureau
☐ division
☐ unit
☐ other (specify) _____

If many responses fall into the last category, a reexamination of the alternatives must be made, and the categories made more realistic. Such a difficulty is less likely to arise if questionnaire items are pretested.

Short-answer items cannot be precoded because the respondent writes his response, or the interviewer writes the respondent's own words. However, the questionnaire constructor can, in advance, design a coding system for short-answer questions to which he feels only a limited number of alternative answers can be given. Codes would be marked after the form was completed by the respondents. For example, a short-answer item might ask the subject to fill in his annual salary. Later coding of answers would be routine because codes could be assigned to different salaries on the basis of predetermined categories ($3000-$3999; $4000-$4999; $5000-$5999, etc.).

CHAPTER 6

Writing the Questionnaire Items

Item writing is essentially a creative task. It is therefore difficult to provide a writer with a list of directions that will enable him to produce good items every time.

Some of the general principles which apply to the writing and improvement of the questionnaire items are discussed in this pamphlet. Success will depend on how carefully the writer applies these principles in his writing.

Before attempting actual item writing, the constructor must familiarize himself completely with the purpose of the questionnaire and its specific content. He must know how the form is to be administered and be familiar with the characteristics of the respondent group. Knowledge of the types of items available for use, as well as their advantages and disadvantages, and the possible methods of classifying the information are also essential.

When a writer develops a questionnaire with the help of subject-matter specialists, he and the specialists should work out the first draft of the items together so that errors in content and in form and wording are prevented.

If possible, the constructor should devise more than one item dealing with a specific subject-matter topic even though only a single item covering that topic will be included in the final questionnaire form. Each proposed item should be arranged or worded differently, although each should be as well constructed as possible. Some of the items will prove useful and others will be eliminated on the basis of reviewers' comments and preliminary and final tryout. In many studies, two forms are designed for later comparison. Construction of more than the minimum number of items in the beginning will facilitate compilation of the two forms.

The constructor must maintain a careful record of each item. This record will facilitate the sorting of items by content to insure adequate subject-matter coverage, and aid in the compilation of the questionnaire items. All reviews of the items should be attached to the original item.

Each item should be neatly written or typed on a separate card or sheet of paper which should also include the following information:

1) the specific area of information which the item is designed to cover

2) the sources, if any, (books, pamphlets, interviews, records, etc.) from which the item or basis for the item is taken

3) the writer's name or initials

An individual questionnaire item must meet the same requirements that any other testing instrument must meet in order to be most effective.

A good questionnaire item:

A) is limited to a single topic;

B) is appropriate to the subject group and administrative method;

C) can be scored or rated in accordance with a predetermined system;

D) is written in precise, understandable, unbiased language;

E) is arranged in a logical position within the questionnaire; and

F) yields valid and reliable information.

Although an item cannot be satisfactory unless it meets all these conditions, the conditions are interdependent. An item will probably not be valid and reliable unless the other conditions are fulfilled. For example, one which contains language that is too technical for the subject group is not likely to yield either valid or reliable information. Similarly, an item which is inappropriate for the particular administrative method cannot be valid for the purpose for which it was designed. The characteristics of a good questionnaire item are described in further detail as follows:

A. <u>The subject matter of the item must be limited</u>.

The subject matter of each item should cover only one specific topic with the topics taken from the areas of information previously decided upon as essential to the study.

When more than one idea or topic is presented in an item, the respondent has difficulty providing an answer or selecting a response. Such an item is called "double-barreled." Analysis of responses will be meaningless because there will be no way of knowing to which idea the subjects really responded.

Example 33: Are you able to discuss work problems with your supervisor in private and in confidence?

The example is double-barreled because it is actually asking two questions--can you discuss work problems with your supervisor in private, and can you discuss them with him in confidence.

That the topic must be relevant to, and valid for, the purpose of the survey appears to be an obvious point. However, it is mentioned here as a reminder to a writer to check the subject matter of each item he prepares against the list of specific information needed. It is poor practice to ask for unnecessary information.

B. The item must be appropriate to the subject group and administrative conditions.

A constructor must familiarize himself in advance with the characteristics of the group to whom a questionnaire form will be submitted in order to insure that the content and language of the items are adapted to the particular group. He must be certain that the group members are likely to provide, on the basis of their experience, knowledge, or observation, the desired information. In order to investigate the relative effectiveness of different aspects of a recruitment program, for example, job applicants are asked from what source they learned about the particular examination for which they applied. The question should be worded so that the individual applicant will report only on how he learned about the examination, not on how his friends learned about it.

The language of the item must be appropriate for the respondent group in order to gain reliable information. Since item wording will be discussed in detail later in this section, only one of the considerations in item wording, its appropriateness, will be discussed here.

The language of the item should be such that the best educated of a group do not feel that the language is beneath them, yet it should be simple enough for the least well educated to understand. When the sample group is either of mixed educational background or of fairly low-level education, the words used should be comprehensible to the least well educated of the group. When the subjects have a high level of education, words of greater difficulty may be used than would be suitable for either a mixed or low-level educational group. The more syllables in a word, the more difficult it is, and the longer the sentence, the more difficult the material is to comprehend. There is some evidence that material is more readily understood when it is read than when it is heard. Therefore, for paper-and-pencil forms, the language of the items may be more difficult than could be used in personal interviewing.

Special care must be taken to avoid including technical or trade terms in an item unless it is certain that the respondents will clearly understand them. When it is necessary to use such terms, and if there are any doubts about their being understood, they should be explained. An explanation would thus insure each respondent's having the same orientation before completing the item. The constructor might, however, determine by item tryout how well the terms are understood.

How does one decide whether an item is appropriate for the administrative method which will be used in a study? The respondent must be able to complete the item under the specific administrative method, unless the item is one which may call for a "no opinion" or "don't know" response under any kind of administration. An item on a form to be completed in a group situation cannot ask for information for which the respondent must refer to records, but such an item could be used on a form filled out at the respondent's usual place of work or by personal interview.

We assume that the appropriateness of item content for the particular administrative method has been considered in the course of planning for questionnaire construction. Nevertheless, it is advisable to keep this in mind so that an unsuitable item will be eliminated early in the construction process.

C. The item must be capable of being scored or rated in accordance with a predetermined system.

To fulfill this condition, the format of the item, that is, the type of item and the provision for response, must be in accordance with the scoring or rating system planned for the form.

A form to be scored objectively must be composed of individual items which can be scored objectively either by hand or by machine. In writing the items, the constructor uses the scoring system as a guide to item type and directions for response. The scoring of the whole form will be easier if as many items as possible have the same format, although it is not wise to force items into a particular type merely for this reason.

Methods of response which call for placing a check (✓) or a cross (X) next to the proper answer or in an answer box, crossing out all answers which do not apply, circling the proper response, writing in a symbol, or filling in a space on an answer sheet are all suitable for objective scoring.

Open-end and short-answer questions require only that sufficient room for the responses be allowed on the form. Scoring of such items, however, can be facilitated if the questions are worded carefully and limits set on what is asked. If short-answer questions are written so that only one or two words or numbers are needed to answer them, they can be scored with comparative ease.

Another way to facilitate the scoring of open-end questions is to break one broad question into two precise and limited questions so that the responses are easier to classify. Still another way to simplify the scoring process is to provide the respondent with fairly detailed directions for completion of the item with the expectation that he will thus limit his answer to pertinent information. The rater will, of course, then have less extraneous material to read and discard.

D. Precise, understandable, unbiased language is essential.

Specialists in the measurement of achievement, attitudes, and opinions have done much research on the effects of wording in their efforts to develop precise measuring instruments.

Some years ago, a sample of researchers was asked to list what they considered the chief defects of commercial research. The criticisms that they mentioned most frequently and probably still hold true today are as follows:

Improperly worded questionnaires	75%
Faulty interpretations	58%
Inadequacy of samples	52%
Improper statistical methods	44%
Presentation of results without supporting data	41%

There are definite principles that must govern the choice of item language. Some of them may appear simple, yet the writer who is sure that he knows them must remember that the important thing is to know them and follow them.

The principles are not independent. One may be an amplification of another; one may even appear to be a contradiction of another. Not all the principles apply in all situations. It is the writer's responsibility to guide himself in item construction by the principles which are most appropriate to the particular situation in which he is working. If he is unsure of the wording of an item, he may write it with alternative wordings and await the results of review and tryout before deciding which to use.

1. Use precise language.

Precise language is language that is exact, that means exactly what the writer intends it to mean. Preciseness of language means, too, that all superfluous words in an item are eliminated. Extra words which do not serve to define the particular problem may detract the attention of the subject from the main problem.

2. Use simple language whenever possible.

Simple words are preferable, provided they express the idea clearly. Simple words, however, should be examined carefully to be sure they do not have more than one meaning and that they are sufficiently precise. For example, a word like "office" can be ambiguous. Given a question such as, "What is the total number of employees in your office?", it is not clear whether the writer means the office (room) in which the employee works or the office

(organizational division--unit, section, etc.) in which he is employed. To illustrate further, "government" can mean Federal, State, or local government.

3. Keep the use of technical language to a minimum.

Even when a constructor is familiar with the characteristics of the respondent group, he should examine each technical word he uses. Certain words used within the Federal government have special meanings. As an illustration, there are travel vouchers which a Federal employee submits in order to be reimbursed for approved travel expenses. Vouchers are also mail qualifications questionnaires. Auditors in the Federal service perform industrial cost audits and internal audits. Other employees perform desk audits as part of a job classification or personnel inspection program.

The words used should express the exact meaning that is intended, and the subjects must know that meaning. It is preferable to lengthen an item by an explanation of terms rather than simply assume that all respondents are familiar with them.

The item constructor should be cautious about the use of abbreviations; one which is well known to the writer may be unfamiliar to some respondents. However, if an abbreviation is explained in the first item in which it appears, it can be used in succeeding items without explanation.

4. Specify all standards for judgment, qualifications, or limits.

A writer should include in the item or in the directions for its completion all information necessary so that all respondents will answer it on the same basis.

Example 34: Which of the following statements regarding your employment status is true?

a. employed full-time (30 hours or more a week)

b. employed part-time (less than 30 hours a week)

c. unemployed

Without the explanation of what is considered full- or part-time work, the respondents would be likely to have varying interpretations. An employee working 35 hours a week might consider himself a part-time employee if the standards were not given.

Example 35:

Knowledge and experience in various agricultural areas.
(Please place a check in the appropriate column at the right opposite each agricultural area listed in items a through f below in order to indicate the scope of the applicant's experience in each of these areas.)

	None	Limited Variety of Experience	Wide Variety of Experience	Don't Know
a. Agronomy				
b. Animal husbandry..				
c. Forestry				
d. Horticulture				
e. Range Science.....				
f. Soil Science.....				

Example 36: Whenever you are given a new assignment, does your supervisor tell you in advance enough about it so that you know just how he wants it done?

a. ____ usually
b. ____ sometimes
c. ____ almost never

The constructor has included a qualification in this question. He wants to know whether an employee receives adequate instruction at the time he is given new work, not whether he gets the instruction later.

So-called "blanket-type" words can cover a wide range of interpretations. What is the meaning of "recently", "in the near future", "occasionally", etc. to respondents? For example, a group was asked if they had recently attended a supervisory training course. Of two respondents, both of whom had attended such a course within the past three years, one would check "yes" while the other would check "no" because he did not consider his attendance at the course a "recent" experience.

It is sensible to specify the terms in which an answer is to be given, provided it is possible to do so. Instead of asking how often an employee performs a task, ask him how many days in the past month or how many hours a week he spent on that work.

5. Be cautious about extreme words.

Words like "always", "never", "anyone", and "nobody" may limit the item content so that results are distorted. Their inclusion in items should be generally restricted to situations where extreme judgements are desired.

Example 37: Does your immediate supervisor give you clear instructions about your job duties?

- ☐ always
- ☐ most of the time
- ☐ sometimes
- ☐ never

Extremes can be avoided in some items by using words like "generally", "usually", "most", and "practically all." A respondent may think that a statement is generally accurate yet be aware of exceptions to it. Under these circumstances, he would hesitate to express full agreement with the statement but would agree with a question wording that acknowledged these exceptions.

6. Avoid negative wording.

It is confusing and annoying to a respondent to have to decide what a "yes" or a "no" answer to a negatively worded item means.

Example 38: Is he unable to follow directions? Yes ☐ No ☐

Checking "Yes" means, "Yes, he is unable to follow directions." Checking "No" means, "No, he is not unable (able) to follow directions." It would be much easier for the respondent to answer either of the positive rewordings of this question, shown in example 39.

Example 39: Is he able to follow directions? Yes ☐ No ☐

He is (able) to follow directions.
(unable)

7. Use proper grammar.

Item writers should follow the same rules of grammar that all writers should follow. In addition, the item writer, in the interest of clarity, should use the simplest possible sentence structure. Slang and colloquial terms should be avoided.

8. Avoid wordings which may bias response.

Leading questions have no place in a conscientiously prepared questionnaire.

Example 40: You like your job, don't you? Yes ☐ No ☐

In answering the above question, even the most naive respondent would realize that, whether or not he could honestly agree to a "yes" answer, that was undoubtedly the one that was wanted.

In attitude and opinion questionnaires, it is of particular concern that the question be worded so that both sides of an issue are presented fairly in the body of the item and in the alternatives. A biased response can arise not only from a distorted presentation of the issue, but also from the inclusion in the item of words which may have an unfortunate emotional tone for respondents. Special care should therefore be taken to avoid using stereotyped words and words that may make subjects feel threatened. An example of the latter is a question on which a respondent is asked for an opinion on a proposed change as opposed to the maintenance of the status quo. Most people favor continuing a familiar situation rather than adopting a change, although they may like the change in the situation once it is accomplished.

Items that request information which may involve a respondent's self-esteem or desire for prestige must be carefully worded. Questions about matters such as the amount of supervisory responsibility and relative importance of a position in an organization should be designed

so that respondents provide specific information (not opinion) about the actual number of people they directly and indirectly supervise, what supervisory control they have over others, and what grades and positions their subordinates hold. Given this information by supervisors, and specific information by subordinates about how they are supervised, a survey conductor can determine the supervisory duties of a position objectively.

Some survey conductors feel that personal questions (e.g., age, income) should not be asked, and it is essential that, at all times, the privacy of the respondent be protected. Frequently, the plans for the study permit gross information. For example, it may be sufficient to ask an individual whether he is under or over age 30, rather than his exact age. At other times, it is decided that, if the purposes of the survey are adequately stated and the respondents realize that the information is needed, most persons will answer the questions willingly.

9. In dichotomous and multiple-choice items, make alternatives mutually exclusive and well-defined.

This point cannot be overemphasized; overlapping and poorly defined alternatives will confuse respondents and lessen the reliability and validity of items.

Example 41: Which of the following is the most important to you in buying a new car?

a. appearance
b. color
c. design
d. durability
e. price

To some persons, appearance and color overlap. Design is confusing because it may be selected by some as a synonym for appearance and by others as a reference to the mechanical qualities of the car.

10. In two-choice and multiple-choice items, provide all necessary alternatives.

If the topic of the item permits "No opinion", "Both", "Don't know", or "Other-specify" responses, these alternatives should be added to the response list. If combinations of alternatives are

essential to cover all possible responses, they should be included. The constructor should remember that the number of alternatives in multiple-choice items can be large. It is his responsibility to set up a comprehensive list in an organized manner to insure ease of response and scoring.

11. Make all alternatives grammatically consistent with the item premise.

Each response to dichotomous or multiple-choice items with an incomplete premise should form a complete grammatical sentence when added to the premise.

Example 42: I will accept appointment

a. anywhere in the United States
b. in the Washington,D. C. area only
c. outside the United States
d. in the following locations only: _____

When the premise is a complete question or sentence, the response should also be consistent with the premise.

Example 43: Do you think your supervisor would object if you were offered a better job and requested a transfer?

a. ___ He certainly would.
b. ___ He probably would.
c. ___ He probably would not.
d. ___ He certainly would not.

Response (a.) in this example means: "I think 'he certainly would' object if I wanted to transfer to a better job." Response (b.) is the same except for the substitution of "probably" for "certainly."

Whenever possible, each response should have parallel form, i.e., be in the same mood, contain the same parts of speech, and be equally appropriate to the premise. In the following example which illustrates this point, the first part contains some alternatives that do not logically follow the premise; the second part shows how such a question should be phrased.

Example 44: . . . because they are:

( ) bulky
( ) easily broken
( ) explosive
( ) deteriorate rapidly

( ) hazardous
( ) highly inflammable
( ) particularly heavy
( ) must be aged before use
( ) reasons other than those shown above (specify)
_____

. . . because they:

( ) are bulky
( ) are particularly heavy
( ) are easily broken
( ) are hazardous
( ) are explosive
( ) are highly inflammable
( ) deteriorate rapidly
( ) must be aged before use
( ) have characteristics other than the above (specify) _____

12. List alternatives in certain items in logical order.

Alternatives are usually listed in order with the extreme choices at the ends of the list and the other choices in between.

Example 45: Always
Frequently
Sometimes
Rarely

Example 46: Strongly approve
Approve
Undecided
Disapprove
Strongly disapprove

13. Avoid over-elaboration.

Elaboration of an item, contrary to its intended purpose of providing greater clarity, may have the reverse effect and produce contradictions.

Example 47: What school subject do you like least--that is, spend little time studying?

Some persons will spend little time studying a subject they dislike but others will spend more time on such a subject because it may be more difficult for them.

E. The questionnaire items should be arranged logically within the questionnaire.

Every effort should be made to make it as easy as possible for the respondent to answer the questions, and one way to do this is to arrange the items in a logical and orderly fashion. Insofar as possible, items relating to a particular topic should be grouped together. Sometimes, several questions can be set up under one Arabic numeral with subletters.

F. A good item should yield valid and reliable information.

If all other conditions of a good questionnaire item have been fulfilled, an item will probably provide valid and reliable information. Regardless of whether an item evaluation is made on the basis of statistical methodology or on some other basis, the item must fulfill the purpose for which it was designed by providing accurate information relevant to the purpose of the study.

Just as it is not always possible to measure the validity and reliability of whole questionnaire forms statistically, it is also not always possible to evaluate statistically the validity and reliability of individual questionnaire items.

Whether the items can be objectively evaluated or not is dependent upon the purpose of the questionnaire, the types of items used, and the content of the items. The constructor has to decide, after consideration of these factors, whether items can be evaluated statistically. It is impossible to provide specific rules on which he may base this decision because each questionnaire must be considered individually. To illustrate, the validity of most items on a questionnaire used to establish position standards cannot be determined statistically because there is no appropriate criterion with which to correlate the item data. Yet if such items serve the purpose of the questionnaire, that is, contribute information for standards determination, they can be considered valid for that purpose. However, the reliability of some of the items on such a questionnaire may be measured statistically by comparing the agreement among respondents with regard to their responses to the items. In addition, if the items are subjectively scored or rated, a measure of rater reliability or agreement can be obtained. If there is high rater reliability, different raters will rate the same questions in much the same way, or the same rater will rate the same questions consistently upon a later rerating.

There are some items on which the constructor, although he expects accurate responses, will not expect agreement among respondents. For example, incumbents in different grades of the same position, subject to varying degrees and frequency of supervision, will respond differently

to the same items concerning the amount and nature of supervisory control. Assuming that the information they provide is accurate, it will be useful in defining differences among grade levels, and the items will be valid and reliable.

CHAPTER 7

Item Review and Tryout

The review and tryout of items before compilation of the first draft of the questionnaire form are necessary, although often neglected, steps in questionnaire design. Regardless of how carefully the item writer has applied the basic rules of item writing, he cannot be sure that the items will effectively evoke the desired information until they are reviewed and tried out.

Review of questionnaire items

Before reviewing an item, a reviewer must become familiar with the specific objectives of a study, the subject population, and the methods of administration and analysis of material. This knowledge is essential because an item must be evaluated in terms of how well it meets the basic and specific conditions necessary.

To insure systematic and complete review, the reviewer should record all his comments and suggestions on a card or sheet of paper attached to the one containing the proposed item.

A reviewer evaluates an item from the point of view of subject-matter coverage, basic measurement principles, and choice of language. In his comments, he may question the use of particular words; he may feel that the standards given to respondents are not sufficiently specific. Further, he may feel that putting the item in a different form would make it more satisfactory. He may also find that a list of alternatives is not complete or that an alternative is inaccurately stated. The list of possible criticisms is endless.

A reviewer should, if possible, make concrete suggestions for the improvement of an item. When review is completed, a complete written record of criticisms and suggestions is available to the writer for use in revising the items. The writer may not agree with some of the comments or want to accept certain suggestions. Where there are differences of opinion, pretryout of items often provides information which may resolve the differences.

Below is a checklist which may be used as a guide by reviewers. Not all of the points in the checklist are applicable to all items. It is advisable, however, to check each item against the entire list before deciding which do not apply.

Checklist for Review of Items

1. Item content:

   a. Is the content limited to one topic or idea (not double-barreled)?

   b. Is the topic or idea relevent to the study?

2. Is the item likely to yield the information the writer intends it to yield? (Is it likely to be valid?)

3. Does the form of the item conform with the coding or rating system which will be used?

   a. Is proper provision made for response(s)?

4. Is the item appropriate for the administrative method which will be used?

5. Would the item elicit the desired information more easily or completely if written in a different form? Which one?

   a. Free-answer?

   b. Short-answer?

   c. Two-choice?

   d. Multiple-choice?

6. Two-choice items:

   a. Are the alternatives clear-cut, separate?

   b. Are the alternatives realistic?

   c. Are both alternatives stated clearly?

   d. If one alternative is implied but not stated, is the fact that there are actually two choices clearly evident?

   e. Are the alternatives mutually exclusive?

f. Is provision made for a possible third response? (As mentioned earlier, a third response is not always necessary.)

1. No opinion

2. Don't know

3. Both

4. Neither

5. No oppportunity to observe

6. Other: Specify _____

7. Multiple-choice items:

a. Are the alternatives clear-cut, separate?

b. Are the alternatives mutually exclusive?

c. Are the alternatives accurate?

d. Is the number of alternatives sufficient?

e. Are the numbers and alternatives listed in logical order?

f. Is provision made for "no response"? (To repeat, provision need not always be made for "no response".)

1. None of these

2. No opportunity to observe

3. No opinion

4. Other: Specify _____

8. Where necessary, have a frame of reference and a standard of judgment been included?

a. in the directions for the item?

b. in the premise of the item?

c. in the alternatives

9. Item wording:

a. Is the language clear and precise?

b. Is it appropriate for the respondent?

c. Is it grammatically correct?

d. Is it worded in positive language?

e. Is it easy to read?

f. Is it easy to complete?

First tryout of items

A first tryout of items, even before tentative compilation of the questionnaire form, can be a very advantageous step in questionnaire construction. Many gross errors in form and wording show up at this stage in spite of a careful review of the proposed items.

The questionnaire constructo. does not normally attempt statistical evaluation of his questions in a first item tryout. He is interested only in an informal trial of the items since he will have a formal tryout of the completed questionnaire form later.

The constructor assembles the items that have been written and reviewed and prepares tentative directions for administering and completing the questions. He asks a few people, similar to the sample population to be used in the study, to answer the items, making it clear to them that the tryout is for research purposes and that the items may give them some difficulty. When respondents similar to the sample subjects are unavailable, a constructor may ask his fellow workers to try out the items.

The first tryout may be carried out by the writer personally. He either asks the questions in a personal interview or administers the questions by the method which will be used in the whole study. Many survey conductors prefer tryout in a personal interview because they feel that they can learn much from direct observation.

In a tryout, a constructor frequently asks the respondent to comment either orally or in writing on the questionnaire items; he is asked, for example, to indicate items which he had difficulty in understanding, or additional alternatives which he feels should be included. He may also be asked to suggest change in wording.

The first tryout enables the constructor to (1) find out whether any of the subject matter he is investigating is inadequately covered by the current number of items; (2) discover items in which so many responses were recorded in the "Other--Specify" category that a revision of alternative responses must be made; (3) estimate the amount of time needed to complete the finished form; and (4) test his coding system--some items may be as effective and easier to handle in a different form.

CHAPTER 8

Designing the Questionnaire Form

Compile tentative directions to respondents and administrators

Directions for respondents which will appear at the beginning of the form and which will provide general instructions for the completion of the questionnaire cover such matters as the purpose of the survey, the sponsoring agency or office, information intended to motivate respondents to complete the form carefully, general directions concerning the method of item response, and, when necessary, sample questions.

Every survey conductor strives to obtain complete and frank answers to every item on his questionnaire. It is true that the appearance of the form, its length, and its ease of response are highly important. Yet it is in the directions to respondents that many questionnaire constructors fail. They may explain satisfactorily the purpose of the study and its importance to the conductor of it, but if they do not convince the respondent of the importance of his contribution, they will fail.

First of all, a respondent must be assured of the confidentiality of the information he furnishes. Even in questionnaires which need not be signed, this assurance must be given.

Second, the importance of frank, honest answers must be emphasized. For example, suppose a respondent is asked to evaluate the job competence of employees. The constructor must, first of all, point out that the value of the findings will be in direct proportion to the accuracy of the information obtained. Equally important is the need to make the respondent understand that the employees themselves will also suffer from faulty ratings. We mentioned earlier the reluctance of most persons to rate others low on a scale. Yet an employee promoted on the basis of an unrealistic rating may fail miserably. If a constructor can convince respondents that they do employees no favor by rating them excellent when they are poor or merely adequate, or by rating them in any way other than the way they should be rated, he will have done much to assure the accuracy of questionnaire results.

Directions for specific items and groups of like items are written now if this was not done during the construction of the questions. All directions for item response should be checked for adequacy at this point; the constructor may revise the introductory directions after reviewing those for individual items.

For group administration of a questionnaire, special directions for the administrators are required to insure controlled administrative conditions. These instructions cover the entire process; e.g. the distribution of supplies and forms, introductory remarks, directions for completing the form, directions for answering any questions asked by the group members, and the collection of forms. All remarks which the administrators will make to the group must be written out completely in the directions.

Directions are also required for interviewers. When the survey conductor is interested in standardized or structured interviews, the directions should be very specific and detailed. When the interviewer is to be given flexibility in conducting the interview, the directions should provide general guidelines for him. Certain language and procedures may be suggested, but the interviewer may use his discretion in following them.

The directions for both response and administration are only tentative; they may need to be revised after pretesting.

Design the first form of the questionnaire

The items which are acceptable after review and tryout and the tentative directions to respondents make up the questionnaire form. The questionnaire assembled for the pretest is designed carefully, although it is usually duplicated simply and inexpensively.

A. The appearance of the form influences response.

A respondent will generally be conscientious about completing a form which has a pleasing appearance. The constructor does not have to concern himself quite so carefully with the appearance of a form to be completed by an interviewer, as long as it is clear and easy to follow.

Appearance is affected by the method of form reproduction. Printed and multilithed forms are unquestionably better appearing than mimeographed or dittoed ones. However, because of budget limitations or because the number of subjects does not justify the employment of more expensive reproduction methods, questionnaires are sometimes not reproduced by the most desirable methods.

More important, appearance is affected by the layout of the items on the form. The general directions should be arranged so that they can be easily read and, if necessary, referred to later. Individual items or groups of like items should be set off from one another by lines or spaces. Arrangement of items in either columns or rows adds to the neat appearance of the form.

B. Ease of response is an important consideration in questionnaire design.

A neat form is easier for the respondent to complete than one which looks cluttered and disorganized. The grouping of items for which there is one set of directions simplifies the respondent's task. The numbering of items consecutively without repetition of any number permits the respondent to see at a glance in what order he is to respond to the items. It also eliminates confusion when items are referred to by number in the directions. The respondent's task is simplified, too, if there is sufficient space on the form to complete write-in questions legibly and completely.

C. The length of the questionnaire is another consideration in questionnaire design.

Some questionnaires, such as mail employment reference forms, rely for completion on the respondent's voluntary cooperation. These forms therefore, cannot be so lengthy that recipients are unwilling to take the time to complete them. When designing such questionnaires, the constructor may find that he must limit the number of pages in the form, thus necessitating the elimination of the least important items. If, as part of preliminary planning, required subject matter was listed in order of priority, the elimination process is simplified.

Questionnaires should be only as long as is necessary to cover the required subject matter. It is the constructor's responsibility to design the form carefully and concisely even though he is fairly certain that the respondents will be conscientious about completing it.

It should be remembered that the greater the proportion of objective items on a form, the easier it is to fill out. Respondents may be more willing to complete a long objective-type questionnaire than they are to fill out one which requires fairly detailed answers.

D. Provision for the scoring or rating of the form should be included.

In assembling precoded forms, the constructor makes certain that the system of numbering and lettering the items and alternatives corresponds to the coding system. When codes are to be assigned later, the constructor provides enough space next to each item for the code to be written in and tabulated without confusion or error.

The most efficient layout from the point of view of coding and extracting operations is to set up the form so that the answer spaces are on one side of a column or page. Some questionnaire material does not lend itself to this kind of layout, but the constructor should try to fit at least part of the copy into it.

Pretest the first form of the questionnaire

The pretest provides the first opportunity for the constructor to test the adequacy of his survey plan and the effectiveness of the questionnaire instrument. In the pretest, the first form of the questionnaire is given to a small group of people, as much like the sample group selected for the full study as possible. The method of administration is, in general, the same as that planned for the complete study, although special directions may be given. These directions may, for example, ask respondents to record the length of time required for completion of the form, to make any comments or suggestions they like relating to it, or to ask the administrator questions about individual items. After the questionnaires have been completed by the sample group, the constructor has the opportunity to test rating, coding, and tabulation procedures.

The pretest enables the survey conductor to obtain further insight into the effectiveness of the questionnaire. He seeks, through the means and sources available to him, a critical reevaluation of the areas covered, as well as of the items, alternatives, directions, etc. that will lead to necessary and desirable modifications, revisions, additions, or deletions. Some of the questions and problems that emerged can be resolved by interviews with members of the pretest group and with the administrators. Their comments relating to ambiguities in the wording of questions or directions, as well as possible procedural or form changes, will help the constructor make necessary revisions. Another aspect of the questionnaire that can be determined from the pretest group is the acceptability of the form to them; when completion depends on voluntary cooperation on the part of subjects, this information is important. Time limits are still another concern in many questionnaires, and the pretest will show whether some items should be eliminated in order that the group may finish in the allotted time.

In analyzing the questionnaire data, the constructor may measure the reliability and validity of the form statistically; if so, he should keep in mind the possible bias in the pretest group because of its small size, and the effect of questionable items, before deciding whether the validity and reliability of the form make it acceptable for the study. If no statistical evaluation is made, the data are examined for relevance and accuracy of the information for the purpose of the survey. They are also checked for adequacy of subject-matter coverage; where information is lacking or inadequate, additional items must be prepared to cover the pertinent topics.

Item analysis indicates the extent to which the pretest group completed the forms. Item omissions may result from inadequate directions, insufficient standards of judgment, poor item wording, insufficient time, or the disinclination of the respondents to provide the desired information. Analysis of individual items points up those which need revision; for example, items in which an excessive proportion of replies are written into an "other" or "don't know" category will require rewriting. The data will also show whether a large proportion of the replies fell into one or two categories, or whether they were spread over the range of item responses.

Using pretest results as a guide, a constructor makes necessary revisions in the questionnaire items. The revisions may be in item form and/or wording. Some alternatives may be rewritten; others, eliminated or added. Changes may also be made in the directions, standards for judgment, and illustrations. Major changes may be necessary if items are rewritten in different form. If many or extensive revisions are required, another pretest is necessary.

Assemble the final form of the questionnaire

Assembly of the final form of the questionnaire and final directions for administration and data processing complete the task of questionnaire construction.

The final questionnaire form is usually similar to the first one unless gross inadequacies appeared in the pretest. The final form includes all the acceptable items from the preliminary form, the items revised on the basis of pretest results, and all new items. If the principles of good layout were followed in the compilation of the preliminary form, the changes in layout will probably be minor ones resulting from item revisions, additions, and eliminations. Great care must be taken in checking the final form for accuracy of directions, and item wording and numbering. The constructor must, in addition, make certain that all changes are reflected in the instructions for administration and data processing.

It is not within the scope of this pamphlet to discuss the details of the administration, data processing, summarization of results, and evaluation of a questionnaire. These phases of questionnaires are covered in a companion publication entitled "Administration, Data Processing, and Analysis of Questionnaires."

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